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Oil and Gas Well Blowout Report

Events of 1989

ERCB

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1 SUMMARY

This is the sixth edition of this report. It contains information about drilling occurrences and a summary for each blow/blowout that occurred in 1989. The Board considers the publication of this information to be a constructive way to improve the level of understanding of many aspects of well control and drilling occurrences, and the ERCB role in this matter.

1989 Summary

In 1989, some 4142 wells were drilled by 415 active drilling rigs. A total of six blowouts and six blows occurred while drilling these wells. Further, among an active well population of approximately 90 000, seven well control incidents were reported during servicing operations and an additional fourteen incidents occurred at producing or suspended wells. Injuries and losses resulting from these incidents included burns to one rig worker, the destruction of two drilling rigs, the loss of 7000 10^3 m^3 of natural gas, the loss of two wellbores, and undetermined damages to crops and agricultural lands. Although minor amounts of sour gas were released during some of the incidents, there were no blows or blowouts at critical sour wells.

While the number of well control incidents at active wells in 1989 was near the 5-year average of 20.3, the totals at wells being drilled rose significantly above the average. The category most affected was that of blows where the 1989 totals increased from one incident in 1988 to six incidents in 1989. Previous to 1989 the average number of incidents for 1 year was 1.2. Excluding this 1-year high, the established trend has been between one and two incidents per year. It would be premature to suggest that an upward trend exists based solely on this 1-year high. However, blowouts in 1989, while increasing by only one incident over 1988, are of greater concern since they have maintained the upward trend started with last year's 5-year high of five incidents. A detailed review of blows and blowouts at drilling wells was conducted in an attempt to assess this apparent upward trend in well control incidents. The following factual observations were made:

- As in previous years the leading cause of both blows and blowouts was human error.

- Of the twelve well control incidents at wells being drilled, ten occurred at depths less than 1000 m.

- All six drilling blowouts occurred at wells licensed to small or medium sized operators.

As in the past, the ERCB will be using the information obtained from this report as a measure of the adequacy of its current regulations and policies regarding well control. Accordingly, some changes may be required. Any changes proposed would first be discussed with the various industry associations through their participation on the Blowout Prevention and Well Control Examination and Certification Committee, the Rig Inspection and Enforcement Committee, and the Drilling and Completions Committee.

While the ERCB is concerned with the blowout trend exhibited during the past 2 years, it is significant that no blowouts have occurred during the first 6 months of 1990.

In past years this report included sections on wells licensed and drilling and service rig inspections. To reduce duplication, these sections will no longer be contained in this report. The Field Operations Department provides a summary report on ERCB rig inspection results to CPA, IPAC, and CAODC on an annual basis. Well licensing statistics are published in the Alberta Oil and Gas Industry Annual Statistics Report, ERCB ST 17. Copies of these reports are available for viewing at ERCB Information Services. In addition to the omission of the above two sections this report will no longer include the 10-year historical summary of the details of each blow/blowout which occurred during that period. This summary may be obtained through the Drilling Section of the Drilling and Production Department.

2 DRILLING, SERVICING, AND OTHER OCCURRENCES

A historical summary of drilling occurrences encountered while drilling wells in 1989 for various depth categories are presented in Section 2.1.1. Section 2.1.2 presents an analysis of drilling occurrences by depth for all wells drilled in the period 1980 to 1989 inclusive. The analysis covers the drilling operations of some 60 000 wells and it should be recognized that more than one occurrence took place in some wells.

Section 2.2 addresses blow and blowout occurrences for well servicing and other operations as well as drilling. The numbers of blow and blowout occurrences, along with the operation being conducted at the time of the occurrence, are summarized in Section 2.2.1. A summary of the causes of blows and blowouts by operation is presented in Section 2.2.2. The statistics for blowout occurrences by operation and for blowout occurrences involving the release of sour fluids for a 10-year period are shown in Sections 2.2.3 and 2.2.4 respectively.

A summary of each of the fifteen blow and eighteen blowout occurrences in 1989 is presented in Section 2.3. Specific information provided includes the well location and the operations being conducted at the time of the occurrence, along with a brief description of the event, control procedures, cause, losses, injuries, and actions to prevent future occurrences. In some cases the exact cause and events leading to the occurrence are not fully known; however, the most probable or likely cause has been noted.

The Appendix provides the definitions of terms used in the drilling occurrence summaries in this report.

2.1 Drilling Occurrences - Drilling Operations Only

2.1.1 Historical Drilling Occurrences (including water flows) 1989 to 1981

KICKS

Depth (metres)	1989	1988	1987	1986	1985	1984	1983	1982	1981
0 - 750	75	79	60	61	94	60	48	58	96
751 - 1 800	64	104	122	95	148	109	79	48	78
1 801 - 3 600	36	82	40	60	89	75	56	31	58
3 601 - 6 000	2	9	8	2	8	4	1	3	15
6 001+	0	0	0	0	0	0	0	0	0
Total	177	274	230	218	339	248	184	140	247

BLOWS

Depth (metres)	1989	1988	1987	1986	1985	1984	1983	1982	1981
0 - 750	5	0	1	0	0	0	0	1	4
751 - 1 800	1	1	0	2	2	0	2	3	3
1 801 - 3 600	0	0	0	0	0	0	1	2	3
3 601 - 6 000	0	0	0	0	0	0	0	0	1
Total	6	1	1	2	2	0	3	6	11

BLOWOUTS

Depth (metres)	1989	1988	1987	1986	1985	1984	1983	1982	1981
0 - 750	2	1	2	2	1	0	0	2	1
751 - 1 800	3	3	0	0	0	2	1	0	1
1 801 - 3 600	1	1	0	0	0	2	0	2	0
3 601 - 6 000	0	0	0	0	0	0	0	0	0
6 001+	0	0	0	0	0	0	0	0	0
Total	6	5	2	2	1	4	1	4	2

LOST CIRCULATION

Depth (metres)	1989	1988	1987	1986	1985	1984	1983	1982	1981
0 - 750	655	934	873	859	1316	893	618	764	922
751 - 1 800	298	441	482	408	484	389	321	254	314
1 801 - 3 600	96	142	144	132	159	112	85	74	39
3 601 - 6 000	7	15	10	7	7	0	2	3	6
6 001+	0	0	0	0	0	0	0	0	0
Total	1056	1532	1509	1406	1966	1394	1026	1095	1381

WATER FLOWS

Depth (metres)	1989	1988	1987	1986	1985	1984	1983	1982	1981
0 - 100	5	8	9	12	8	9	5	7	9
101 - 200	3	7	5	8	1	6	3	5	10
201 - 300	4	7	0	5	8	1	2	1	3
301 - 400	2	2	3	2	2	0	1	1	2
401 - 750	2	1	0	0	6	3	2	5	4
751 - 1 800	7	2	3	1	6	1	13	4	3
1 801 - 3 600	1	1	1	0	4	0	11	1	0
3 601 - 6 000	0	0	0	0	0	0	0	0	0
Total	24	28	21	28	35	20	37	24	31

Note: Changes to the statistics of previous years reflect updating to the ERCB data base.

2.1.2 Drilling Occurrence Analysis - Drilling Operations 1980 to 1989

Occurrence Type								Occurrences Per 1000 Wells Drilled				
Depth of Occurrence	Cum Wells	Kicks	Blows	Blow-outs	Lost Circ	Water Flows	Total Occurr	Kicks	Blows	Blow-outs	Lost Circ	Water Flows
0- 500	60 807	379	7	6	7 736	221	8 349	6.23	0.12	0.10	125.22	3.45
501-1000	52 706	722	12	5	2 416	53	3 207	13.70	0.21	0.09	45.84	1.00
1001-1500	30 038	305	5	1	1 541	12	1 864	10.15	0.17	0.03	51.30	0.39
1501-2000	17 796	382	7	3	1 321	14	1 727	21.47	0.39	0.17	74.23	0.79
2001-2500	7 765	200	1	2	445	14	662	25.76	0.13	0.26	57.31	1.80
2501-3000	3 214	181	5	2	289	7	484	56.32	1.56	0.62	89.92	2.18
3001-3500	1 188	91	1	1	163	2	258	76.59	0.84	0.84	137.20	1.68
3501-4000	510	33	1	0	48	0	82	64.71	1.96	0.00	84.36	0.00
4001-4500	223	33	1	0	15	0	49	147.98	4.48	0.00	22.42	0.00
4501-5000	107	10	0	0	12	0	22	93.45	0.00	0.00	88.89	0.00
5000 +	34	8	1	0	0	0	9	235.29	29.41	0.00	0.00	0.00
Total	60 807	2 344	40	20	13 986	323	16 513	38.55	0.66	0.32	230.00	5.31

2.2 Blow and Blowout Occurrences - Drilling, Servicing, and Other Operations

2.2.1 Blow and Blowout Occurrences - 1989 - All Operations

Operation	Blows	Blowouts
Drilling	6	6
Servicing	0	7
Other	9	5
Total	15	18

2.2.2 Causes of Blows/Blowouts - 1989

Occurrence	Operation and Cause
Blows - 15	Drilling - 6 Human error - 5 Abnormally pressured zone - 1
	Servicing - 0
	Other - 9 Equipment failure - 4 Third-party damage - 1 Human error - 3 Unknown - 1
Blowouts - 18	Drilling - 6 Human error - 3 Abnormally pressured zone - 2 Inadequate cementing - 1
	Servicing - 7 Human error - 6 Third-party damage - 1
	Other - 5 Equipment failure - 1 Third-party damage - 1 Inadequate cementing - 1 Human error - 2

Total - 33

2.2.3 Blow and Blowout Occurrences (Historical Statistics) 1989 to 1980

	Blows		Blowouts			Total Blow/ Blowouts
	Drilling	Servicing & Other	Drilling	Servicing	Other	
1989	6	9	6	7	5	33
1988	1	4	5	6	9	25
1987	1	5	2	2	13	23
1986	2	6	2	4	12	26
1985	2	5	1	6	15	29
1984	0	3*	4	4	7	18
1983	4	4	1	3	9	21
1982	6	8	4	4	8	30
1981	11	3	2	3	8	27
1980	9	6	2	5	3	25
Total	42	53	29	44	89	257

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* Prior to 1984 many servicing and other blows were not recorded.

2.2.4 Blowout Occurrences with Sour Fluids Released (Historical Statistics) 1989 to 1980

	Drilling			Servicing			Other		
	Sweet	Sour	Total	Sweet	Sour	Total	Sweet	Sour	Total
1989	5	1	6	6	1	7	5	0	5
1988	4	1	5	6	0	6	8	1	9
1987	2	0	2	2	0	2	11	2	13
1986	2	0	2	3	1	4	11	1	12
1985	1	0	1	5	1	6	11	4	15
1984	4	0	4	4	0	4	5	2	7
1983	0	1	1	2	1	3	8	1	9
1982	3	1	4	1	3	4	7	1	8
1981	1	1	2	2	1	3	7	1	8
1980	2	0	2	5	0	5	2	1	3
Total	24	5	29	36	8	44	75	14	89

2.3 Blow/Blowout Summaries of Each Occurrence - 1989

A summary of each of the 33 blow/blowout occurrences for 1989 is presented in the following tabulations. The definitions regarding the type of occurrences and the operations at the time of the occurrences are provided in the Appendix.

BLOW/BLOWOUT SUMMARY

WELL NAME: AQUIT MOBIL RAINBOW 7-32-109-8

LOCATION 100/07-32-109-08W6/0 LICENCE NO.: 0027455

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 15 March 1989 DURATION: 1.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; _____ SERVICING; X OTHER

LICENSEE: CANTERRA ENERGY LTD.

CONTRACTOR:

FORMATION: KEG RIVER DEPTH: 1953.8 - 1990.3 m

FORMATION PRESSURE: 17 140 kPa or DRILLING FLUID DENSITY: ________ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: FLOWING OIL WELL

DESCRIPTION OF EVENT: An "O" ring in the wellhead cap failed, allowing the well to flow.

CONTROL PROCEDURES: Operators equipped with self-contained breathing apparatus entered the well site and closed the two master valves and the flowline valve.

CAUSE OF BLOW/BLOWOUT: Equipment Failure - "O" ring

ACTIONS TO PREVENT FUTURE OCCURRENCES: Scheduled maintenance checks.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.5 10^3 m^3 sour gas (3.0% H_2S), 0.24 m^3 oil.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: AQUIT MOBIL RAINBOW 9-32-109-08

LOCATION 100/09-32-109-08W6/0 LICENCE NO.: 0041892

OCCURRENCE

____BLOW; X BLOWOUT DATE: 5 JUNE 1989 DURATION: 12 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: CANTERRA ENERGY LTD.

CONTRACTOR: ED'S VALVE SERVICING (1980) LTD.

FORMATION: KEG RIVER "A" DEPTH: 1984.6 - 1994.3 m

FORMATION PRESSURE: 7 100 kPa or DRILLING FLUID DENSITY: ________ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: FLOWING OIL WELL

DESCRIPTION OF EVENT: A servicing crew was attempting to backseat the lower master valve in order to repair a leaking valve stem when the bonnet cap and valve handle blew off. The valve bearings and packing blew out, allowing the well to flow.

CONTROL PROCEDURES: Lost circulation material was pumped through the flowline into the wellhead. This decreased the flow to a slight leak. A collar/valve fitting was screwed on to the valve bonnet stopping the flow.

CAUSE OF BLOW/BLOWOUT: Human error - loosening bonnet prior to verifying valve was properly backseated.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Run tubing plug before working on bottom master valve as well as verifying valve not leaking prior to loosening bonnet.

HYDROCARBON AND/OR EQUIPMENT LOSS: 20.0×10^3 m^3 sour gas (1.5% H_2S).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: BVI SWIMMING 9-12-53-7

LOCATION 00/09-12-053-07W4/0 LICENCE NO.: 0139432

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 1 JUNE 1989 DURATION: 7 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: BOW VALLEY INDUSTRIES LTD.

CONTRACTOR: TRI-CITY #7

FORMATION: COLONY DEPTH: 662 m

FORMATION PRESSURE: 500 kPa or DRILLING FLUID DENSITY: 1 050 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: Serious loss of circulation occurred while drilling into the Devonian. Loss of hydrostatic pressure allowed upper zones to flow to surface. Sweet gas was bled off through the degasser and the flare line.

CONTROL PROCEDURES: The lost circulation zone had to be healed by running a diesel gel plug, lost circulation material, and three cement plugs. Once lost circulation was controlled, all invading gas was circulated out of the well.

CAUSE OF BLOW/BLOWOUT: Human error - drilled into a known lost circulation zone.

ACTIONS TO PREVENT FUTURE OCCURRENCES: The well was drilled deeper than expected into Devonian (lost circulation zone). Controlled drilling should be conducted prior to the lost circulation zone.

HYDROCARBON AND/OR EQUIPMENT LOSS: Approximately 23 x 10^3 m^3 sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: CANTERRA RAINS 11-11-108-8

LOCATION 100/11-11-108-08W6/0 LICENCE NO.: 0106420

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 26 FEBRUARY 1989 DURATION: 1 HOUR

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; _____ SERVICING; X OTHER

LICENSEE: CANTERRA ENERGY LTD.

CONTRACTOR:

FORMATION: KEG RIVER DEPTH: 1795.8 - 1813.7 m

FORMATION PRESSURE: 19 170 kPa or DRILLING FLUID DENSITY: ________ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: FLOWING OIL WELL

DESCRIPTION OF EVENT: An "O" ring in the wellhead cap failed, allowing the well to flow.

CONTROL PROCEDURES: Operators equipped with self-contained breathing apparatus entered the well site and closed the two master valves and the flowline valve.

CAUSE OF BLOW/BLOWOUT: Equipment failure - "O" ring.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Scheduled maintenance checks.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.2 10^3 m^3 sour gas (2.4% H_2S)
0.2 m^3 condensate.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: CHIEFCO ET AL LAWRENCE 10-15-69-25

LOCATION 100/10-15-069-25W4/0 LICENCE NO.: 0057029

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 4 OCTOBER 1989 DURATION: 36 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: ALBERTA ENERGY COMPANY LTD.

CONTRACTOR:

FORMATION: WABAMUN DEPTH: 726.0 - 727.3 m

FORMATION PRESSURE: 3 965 kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: CAPPED GAS WELL

DESCRIPTION OF EVENT: Local area trapper advised forestry of a flow at the well. Forestry notified the ERCB who notified Alberta Energy Company Ltd.

CONTROL PROCEDURES: Operators donned self-contained breathing apparatus and entered the well site. The gas flow was found to be coming from an open needle valve. The valve was closed, stopping the flow.

CAUSE OF BLOW/BLOWOUT: Unknown.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Ensure wells are properly suspended and valves are chained and locked or valve handles removed.

HYDROCARBON AND/OR EQUIPMENT LOSS: 20 x 10^3 m^3 sour gas (trace H_2S).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: CHEVRON CARROT 12-2-53-13

LOCATION 100/12-20-053-13W5/0 LICENCE NO.: 0136770

OCCURRENCE

____BLOW; X BLOWOUT DATE: 14 JANUARY 1989 DURATION: 70 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: CHEVRON CANADA RESOURCES LIMITED

CONTRACTOR: WARDIN WELL SERVICING (1975) LTD. #8

FORMATION: CARDIUM DEPTH: 1567.2 - 1569.5 m

FORMATION PRESSURE: 7 700 kPa or DRILLING FLUID DENSITY:__________kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: SUSPENDED OIL WELL

DESCRIPTION OF EVENT: After tripping out 160 joints of tubing without filling the hole, the well blew out. The BOPs were closed and the crew installed a stabbing valve. The crew was unable to close the stabbing valve.

CONTROL PROCEDURES: A crane lowered BOPs over top of the tubing. The pipe rams were closed, the flow was opened to the flare line and the blind rams closed. The well was killed by pumping 42 m^3 of KCL water down the tubing.

CAUSE OF BLOW/BLOWOUT: Procedural error - failure to maintain hydrostatic pressure on formation, inadequate hole fill procedures.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Implement and follow proper tripping procedures. Increased BOP training.

HYDROCARBON AND/OR EQUIPMENT LOSS: 20.0 m^3 oil (18.4 m^3 recovered)
630 x 10^3 m^3 sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: COLIN ET AL EAGLESHAM 4-14-77-26

LOCATION 00/04-14-077-26W5/0 LICENCE NO.: 0140520

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 12 AUGUST 1989 DURATION: 14 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

RUNNING IN WITH BIT

LICENSEE: COLIN ENERGY INC.

CONTRACTOR: PRECISION DRILLING RIG #9

FORMATION: WABAMUN DEPTH: 2049 m

FORMATION PRESSURE: __________ kPa or DRILLING FLUID DENSITY: 1125 kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: While tripping into the well a gas blow occurred. During attempts to kill the blow, gas vapours ignited, destroying essential well control equipment. This resulted in the total loss of wellbore control and the uncontrolled release of natural gas and salt water.

CONTROL PROCEDURES: The rig was cut apart and pulled away from the well. Pumped 1400 m^3 of 1110 kg/m^3 salt water down the annulus through lines rigged into drilling spool. Pumped 45.3 tonnes of cement into the annulus. Pumped additional 3 tonnes of cement. Removed BOP stack and casing bowl and replaced with new bowl and stack. Pumped cement through drill pipe. Pumped and squeezed cement until flow was shut off.

CAUSE OF BLOW/BLOWOUT: Swabbing while tripping. Failure to adequately divert the gas flow from the rig resulted in a fire. The fire destroyed well control equipment resulting in a total loss of control.

ACTIONS TO PREVENT FUTURE OCCURRENCES: The operator and contractor will be sure to pressure test flare lines and the degasser inlet line. Pure gas will not be circulated through the degasser during well control operations.

HYDROCARBON AND/OR EQUIPMENT LOSS: 6000×10^3 m^3 gas (<1% H_2S)
33 000 m^3 salt water
Drilling rig, one water truck, the wellbore, and some soil damage to nearby agricultural land.

INJURIES: one rig worker (burns).

BLOW/BLOWOUT SUMMARY

WELL NAME: COREXCANA ET AL SHADOW 12-35-74-19

LOCATION 00/12-35-074-19W5/0 LICENCE NO.: 0139504

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 11 APRIL 1989 DURATION: 2 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; ____ SERVICING; ____ OTHER

RUNNING IN HOLE WITH BIT

LICENSEE: COREXCANA LTD.

CONTRACTOR: ARGUS DRILLING #5

FORMATION: GETHING DEPTH: 941 m

FORMATION PRESSURE: ____ kPa or DRILLING FLUID DENSITY: 1000 kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: Tripping in when well began to flow. The flow was directed to flare and the stabbing valve and kelly were installed. The kelly was removed, resulting in drill collars being blown out of the hole. The blind rams were closed.

CONTROL PROCEDURES: A snubbing unit was rigged up. The drill pipe was snubbed to bottom and weighted mud (1090 kg/m^3) was circulated, successfully killing the well.

CAUSE OF BLOW/BLOWOUT: Human error - swabbing and improper hole fill practice caused the kick. Procedural error resulted in the collars being blown out of the hole.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Closer attention to hole fill and reduced tripping speeds.

HYDROCARBON AND/OR EQUIPMENT LOSS: 2100 x 10^3 m^3/d sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: DEVNIC MORINVILLE 16-7-55-24

LOCATION 100/16-07-055-24W4/0 LICENCE NO.: 0137851

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 19 APRIL 1989 DURATION: 4 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: DEVNIC ENERGY INC.

CONTRACTOR: CORRAM WELL SERVICING RIG #4

FORMATION: ELLERSLIE DEPTH: 1086.0 - 1095.5 m

FORMATION PRESSURE: 6 900 kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: While jarring on a stuck packer near surface, the packer came loose, resulting in the fishing tools and tubing being partially hydrauliced out of the hole and the packer assembly becoming lodged in the annular preventer.

CONTROL PROCEDURES: The well was killed utilizing the "top kill" method over an extended period of time.

CAUSE OF BLOW/BLOWOUT: 1. Human error - not anticipating formation pressure below the packer. 2. Equipment failure - it appears the rubber from the annular element peeled off while snubbing into the well. When pulling the packer this rubber caused the packer to become stuck.

ACTIONS TO PREVENT FUTURE OCCURRENCES: 1. Company is to ensure that adequate safety precautions are taken and pressure equalization is considered during fishing operations. 2. Inspect snubbing BOP rubbers after operation to determine if losses may have occurred that may affect future operations.

HYDROCARBON AND/OR EQUIPMENT LOSS: 350 metres of tubing and various fishing equipment destroyed. Slight damage to derrick and monkey board. Undetermined volume of sweet gas flared.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: DOME ET AL SADDLE HILLS 14-7-76-7

LOCATION 100/14-07-076-07W6/2 LICENCE NO.: 0099741

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 19 NOVEMBER 1989 DURATION: 14.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; _____ SERVICING; X OTHER

LICENSEE: AMOCO CANADA PETROLEUM COMPANY LTD.

CONTRACTOR:

1446 - 1451

FORMATION: BLUESKY/DOE CREEK DEPTH: 574.5 - 578.5 m

FORMATION PRESSURE: __________ kPa or DRILLING FLUID DENSITY: __________ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: SUSPENDED GAS WELL

DESCRIPTION OF EVENT: A vehicle operated by unknown persons apparently struck the wellhead, damaging a wing valve and nipple, resulting in an uncontrolled flow of oil and gas.

CONTROL PROCEDURES: A high-pressure pumping unit tied into second wing valve located on wellhead (opposite side) and pumped KCL and fresh water down production casing, killing the well.

CAUSE OF BLOW/BLOWOUT: Third-party damage - wing valve and nipple damaged, allowing well to flow uncontrolled.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Fence or guards will be installed around wellheads.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1 m^3 oil, 1 x 10^3 m^3 gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: DYNEX ET AL GREENCOURT 5-27-59-6

LOCATION 00/05-27-059-06 W5/0 LICENCE NO.: 0138926

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 3 MARCH 1989 DURATION: 11.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

TEAR OUT BOPs

LICENSEE: DYNEX PETROLEUM LTD.

CONTRACTOR: DOLPHIN DRILLING RIG #4

FORMATION: ________ DEPTH: 357 m

FORMATION PRESSURE: ________ kPa or DRILLING FLUID DENSITY: N/A kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: The production casing had been cemented and the BOPs removed. It is suspected the cement top was low. The well flowed salt water and gas up the annulus.

CONTROL PROCEDURES: Perforated production casing above the cement top, circulated and cemented.

CAUSE OF BLOW/BLOWOUT: Inadequate cementing - low cement top.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Improved cementing procedure and increased wait on cement time prior to removal of the BOP system.

HYDROCARBON AND/OR EQUIPMENT LOSS: 6 x 10^3 m^3 sweet gas, 450 m^3 salt water.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: ESSO ET AL HOLMBERG 16-19-44-17

LOCATION 100/16-19-044-17W4/2 LICENCE NO.: 0090095

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 13 DECEMBER 1989 DURATION: 3.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: ESSO RESOURCES CANADA

CONTRACTOR: OTIS ENGINEERING

FORMATION: BELLY RIVER DEPTH: 345.5 - 348.0 m
390.0 - 394.0 m

FORMATION PRESSURE: 2422 kPa or DRILLING FLUID DENSITY: ________ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: SHUT-IN GAS WELL

DESCRIPTION OF EVENT: While installing a lubricator on the well, a contract worker dropped a pipe wrench, shearing off a 13-mm valve threaded into the wellhead.

CONTROL PROCEDURES: A high-pressure pumping unit tied into a valve on the wellhead and pumped down the casing to kill the well.

CAUSE OF BLOW/BLOWOUT: Human error - worker dropped pipe wrench.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Install proper gate valves off casing side of wellhead. Bull plug and needle valve, not considered a safe practice.

HYDROCARBON AND/OR EQUIPMENT LOSS: 3.0×10^3 m³ sweet gas (1.0 m salt water).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: ESSO UNIT JUDY 6-23-63-11

LOCATION 100/06-23-063-11W5/0 LICENCE NO.: 0107102

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 5 AUGUST 1989 DURATION: 3.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: ESSO RESOURCES CANADA LIMITED

CONTRACTOR:

FORMATION: SWAN HILLS DEPTH: 2706 - 2726 m

FORMATION PRESSURE: 26 600 kPa or DRILLING FLUID DENSITY: ________ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: The walking beam on the pumpjack broke and fell to the ground, shearing off the polish rod and damaging the stuffing box. The polish rod fell down the well, resulting in a flow through the stuffing box. Most of the flow originated from the tubing casing annulus, out the wing valve and back through the well on the flowline connection.

CONTROL PROCEDURES: The casing valve was shut in, the damaged stuffing box was removed (threaded connection) and a valve installed to control flow from the tubing.

CAUSE OF BLOW/BLOWOUT: Equipment failure.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Increased maintenance inspections.

HYDROCARBON AND/OR EQUIPMENT LOSS: 6.5 m^3 crude oil.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: ESSO CC15 LEMING ETHEL EX 3-7-65-3

LOCATION 1AB/03-07-065-03W4/00 LICENCE NO.: 0103739

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 22 MAY 1989 DURATION: 4 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: ESSO RESOURCES CANADA LIMITED

CONTRACTOR: ____

FORMATION: ____ DEPTH: 489 - 497 m

FORMATION PRESSURE: ____ kPa or DRILLING FLUID DENSITY: ____ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING CRUDE BITUMEN (STEAM CYCLIC)

DESCRIPTION OF EVENT: The polish rod backed off from the corod connection, allowing the well to flow.

CONTROL PROCEDURES: A high-pressure pump unit was tied into the casing. After pumping 13 m^3 cold water down the casing, the flow decreased sufficiently to allow installation of a valve. The valve was closed, stopping the flow.

CAUSE OF BLOW/BLOWOUT: Human error - inadequate torque applied when polish rod was connected to corod.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Increased training and awareness to ensure adequate torque applied during make-up of rod string.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.0 m^3 crude bitumen.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: ESSO 87-C4-19 COLDLK 5-18-65-3

LOCATION 108/05-18-065-03W4/0 LICENCE NO.: 0126260

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 8 JUNE 1989 DURATION: 0.5 HOUR

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: ESSO RESOURCES CANADA LIMITED

CONTRACTOR:

FORMATION: CLEARWATER DEPTH: 529 - 537 m

FORMATION PRESSURE: 5 500 kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING CRUDE BITUMEN (STEAM CYCLIC)

DESCRIPTION OF EVENT: The polish rod backed off from the corod string and hydrauliced to the top of stroke. The operator assumed a blockage in the wellhead and diverted steam to the well. When the steam contacted the wellhead, the polish rod was hydrauliced out of the stuffing box and the well began to flow.

CONTROL PROCEDURES: Steaming was stopped and the rod BOPs were closed, decreasing the flow. A stabbing valve was installed and closed, bringing the well under control.

CAUSE OF BLOW/BLOWOUT: Human error - equipment failure.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Increased operator awareness of wellhead equipment and re-design of polish rod-corod connection.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.6 m³ crude bitumen.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: FARM WATER WELL

LOCATION NW 1/4 02-053-12W4/0 LICENCE NO.: NOT LICENSED

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 26 OCTOBER 1989 DURATION: 30 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

TRIPPING OUT

LICENSEE: N/A

CONTRACTOR: ERNEST WATER WELL DRILLING

FORMATION: (SAND ZONE) DEPTH: 94.5 m

FORMATION PRESSURE: UNKNOWN kPa or DRILLING FLUID DENSITY: ________ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: While drilling a water well, the contractor encountered shallow gas which resulted in gas and fresh water blowing out of the well. The drill pipe was in the hole and gas was being emitted from the drill pipe and annulus.

CONTROL PROCEDURES: The kelly was stabbed into the drill pipe. A cement pumper was moved in. The pump unit was tied into the well via a 50-mm line. 1400 kg/m³ mud was pumped down the drill pipe until the well was killed.

CAUSE OF BLOW/BLOWOUT: Abnormally pressured zone.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Area will be flagged in order that operators are aware of potential shallow gas.

HYDROCARBON AND/OR EQUIPMENT LOSS: Sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: GULF BELLIS 10-28-59-16

LOCATION 00/10-28-059-16W4/0 LICENCE NO.: 0142254

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 28 DECEMBER 1989 DURATION: 11 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: GULF CANADA RESOURCES LTD.

CONTRACTOR: SATURN DRILLING #1

FORMATION: NISKU DEPTH: 618 m

FORMATION PRESSURE: UNKNOWN kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: Lost circulation at 618 m with gas to surface.

CONTROL PROCEDURES: Mixed lost circulation material and pumped down the drill pipe while pumping water down the annulus. Could not seal off lost circulation zone. Hoist to run an inflatable packer while continuously top filling with mud and lost circulation material. The hole stopped taking mud and the gas was circulated out. An inflatable packer was set at 615 m to seal off the lost circulation zone.

CAUSE OF BLOW/BLOWOUT: Human error - incorrect judgement.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Thought should be given to run an intermediate string, prior to the Nisku, in this area.

HYDROCARBON AND/OR EQUIPMENT LOSS: Approximately 3 Mcf/d sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: HUSKY ET AL SEAL 5-1-83-14

LOCATION 100/05-01-083-14W5/0 LICENCE NO.: 0122593

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 31 JANUARY 1989 DURATION: 96 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: HUSKY OIL OPERATIONS

CONTRACTOR:

FORMATION: SPIRIT RIVER DEPTH: 364 - 367 m

FORMATION PRESSURE: N/A kPa or DRILLING FLUID DENSITY: N/A kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: Sweet gas and mud flowed from surface casing/production casing annulus (vent).

CONTROL PROCEDURES: Ice cone around wellhead thawed out. Repair made to surface casing vent piping. A gel/cotton mixture was pumped down the surface casing and froze off the flow. Source of flow determined and remedial cementing operation conducted.

CAUSE OF BLOW/BLOWOUT: Inadequate primary cementing - low cement top allowed shallow formation(s) to flow.

ACTIONS TO PREVENT FUTURE OCCURRENCES: The primary cementing program will be altered in this area to ensure all potential hydrocarbon zones are covered by cement.

HYDROCARBON AND/OR EQUIPMENT LOSS: 10^3 m^3 sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: ICGR MAXUS KELLY 2-1-73-19

LOCATION 100/02-01-073-19W4/0 LICENCE NO.: 0138362

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 18 MARCH 1989 DURATION: 44.25 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: ICG RESOURCES LTD.

CONTRACTOR: CROWN WELL SERVICING RIG #5

FORMATION: NISKU DEPTH: 499-506 m

FORMATION PRESSURE: 2 150 kPa or DRILLING FLUID DENSITY: 10.16 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: WELL COMPLETION/TRIPPING ACIDIZING TOOLS

DESCRIPTION OF EVENT: Blowout occurred while tripping tubing and selective acidizing tools from well.

CONTROL PROCEDURES: Lubricator was stripped over tubing and well shut in.

CAUSE OF BLOW/BLOWOUT: Human error - inadequate hole filling procedures employed.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Proper hole filling procedures.

HYDROCARBON AND/OR EQUIPMENT LOSS: 198 x 10^3 m^3 sweet gas. No equipment loss.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: PALOMA SIGNALTA HAIRY

LOCATION 00/13-06-055-14W4M LICENCE NO.: 0141733

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 19 DECEMBER 1989 DURATION: 5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: PALOMA PETROLEUM LTD.

CONTRACTOR: TRI-CITY 7

FORMATION: UNKNOWN DEPTH: 699 m

FORMATION PRESSURE: 1 800 kPa or DRILLING FLUID DENSITY: 1050 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: Drilled to 699 m; lost circulation in Nisku Formation. Due to the loss of hydrostatic head, upper gas zones were allowed to enter the wellbore and at 17:10 hr a kick was noted.

CONTROL PROCEDURES: Close annular, open HcR. Open both choke lines and mainflare line to pit. Pump 22 m³ mud with lost circulation material at 34 S.P.M. keeping casing and pump pressure constant not exceeding M.A.C.P. Pump additional sawdust and LCM. Perform a number of flow checks - no flow in well. Well logged and cased.

CAUSE OF BLOW/BLOWOUT: Human error - incorrect judgement. Drilled into lost circulation zone (Nisku). Upper zone allowed to flow into wellbore.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Thought should be given to running an intermediate string, prior to the Nisku, in this area.

HYDROCARBON AND/OR EQUIPMENT LOSS: 85 000 m³/d sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: PANCON ET AL HOLBURN 6-2-50-28

LOCATION 100/06-02-050-28W4/0 LICENCE NO.: 0127962

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 30 MAY 1989 DURATION: 6 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: PANCONTINENTAL OIL LTD.

CONTRACTOR: PARKLAND INDUSTRIES

FORMATION: GLAUCONITE DEPTH: 1380 - 1387.5 m

FORMATION PRESSURE: 11 556 kPa or DRILLING FLUID DENSITY: ______ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: CAPPED GAS WELL

DESCRIPTION OF EVENT: The blade of a side boom cat struck the well shearing off the master valve.

CONTROL PROCEDURES: A new wellhead bonnet assembly was installed. The new master valve was closed, stopping the flow.

CAUSE OF BLOW/BLOWOUT: Third-party damage.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Contractors must be advised to ensure adequate safety precautions are taken when working near wells. Fence or guards should be installed around wellheads.

HYDROCARBON AND/OR EQUIPMENT LOSS: 10×10^3 m^3 sweet gas, 1 m^3 oil.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: PANCON ET AL SHADOW 8-20-74-18

LOCATION 100/08-20-074-18W5/0 LICENCE NO.: 0140163

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 9 JULY 1989 DURATION: 2 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: PANCONTINENTAL OIL LTD.

CONTRACTOR: ARGUS DRILLING RIG #5

FORMATION: WATER AQUIFER DEPTH: 78 m

FORMATION PRESSURE: UNKNOWN kPa or DRILLING FLUID DENSITY: ____ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: At a depth of approximately 69 m partial loss of circulation was noticed. Sawdust was added to the mud system while drilling ahead to 78 m. It was then noted that returns had completely stopped. The kelly was raised in order to observe the annulus and check the fluid level. As the kelly was raised, there was a sudden flow of water from the well. The rig floor was cleared. A flow of water, gas, silt, gravel and rocks issued from the well to a height of about 7 m.

CONTROL PROCEDURES: 40 m^3 of weighted mud (1660 kg/m^3) containing lost circulation material was pumped down the drill pipe with no returns. This operation killed the water flow; however, a slight gas blow persisted. Pumping weighted mud continued until the well was dead.

CAUSE OF BLOW/BLOWOUT: Abnormally pressured zone - kick was caused by lost circulation which resulted in a loss of control since BOPs were not installed.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Area to be flagged for potential shallow gas. Recommend drilling future surface hole with a diverter system and a large diameter bleed-off line.

HYDROCARBON AND/OR EQUIPMENT LOSS: Sweet gas, water (2-4 m^3/minute).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: PCI ET AL WIND 10-34-59-15

LOCATION 100/10-34-059-15W5/0 LICENCE NO.: 0014619

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 18 OCTOBER 1989 DURATION: 28 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; _____ SERVICING; X OTHER

LICENSEE: PETRO-CANADA INC.

CONTRACTOR:

FORMATION: WOODBEND D-3 A DEPTH: 2590.0 - 2639.3 m

FORMATION PRESSURE: 22 000 kPa or DRILLING FLUID DENSITY: ____ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: STANDING

DESCRIPTION OF EVENT: A small wellhead leak occurred at the ring gasket on the spacer spool located below the master valves.

CONTROL PROCEDURES: Killed well with KCL water through the valve located on the wellhead followed by a calcium carbonate pill.

CAUSE OF BLOW/BLOWOUT: Equipment failure.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Daily inspections of the wellhead will be conducted by the operator.

HYDROCARBON AND/OR EQUIPMENT LOSS: 0.1×10^3 m^3 gas (7% H_2S).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: PEX ET AL KAYBOB 10-16-64-19

LOCATION 100/10-16-064-19W5/0 LICENCE NO.: 0014763

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 19 JANUARY 1989 DURATION: 18 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: PETRO-CANADA INC.

CONTRACTOR: CHEVRON CANADA RESOURCES

FORMATION: BEAVERHILL LAKE DEPTH: 2963.6 - 2975.8 m

FORMATION PRESSURE: 32 000 kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: Polish rod broke in the bridle area and dropped through the stuffing box, allowing the well to flow.

CONTROL PROCEDURES: The flowline valves were opened to atmosphere and pop tank to relieve tubing pressure. The stuffing box was removed and a valve installed. The valves were closed, killing the flow.

CAUSE OF BLOW/BLOWOUT: Equipment failure - polish rod broke due to misalignment with the pumpjack walking beam.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Installation of environmental type BOP on the wellhead of pumping wells capable of flow. Schedule regular maintenance checks for pumpjack walking beam.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.1 x 10^3 m^3 sweet gas, 4 m^3 oil.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: POCO CESSFORD 6-12-23-9

LOCATION Lsd 06-12-023-09 W4M LICENCE NO.: 0141249

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 17 OCTOBER 1989 DURATION: 1.5 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: POCO PETROLEUMS LTD.

CONTRACTOR: PARAGON DRILLING RIG NO. 3

FORMATION: GLAUCONITE OR VIKING DEPTH: TD 945 m

FORMATION PRESSURE: 10 200 kPa or DRILLING FLUID DENSITY: 1160 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: TRIPPING

DESCRIPTION OF EVENT: Tripping through tight spot at 679 m. Installed kelly to circulate. Well began to flow.

CONTROL PROCEDURES: Killed drill pipe side with heavy mud. Top killed casing side. Installed stabbing valve and inside BOP and ran in hole to TD.

CAUSE OF BLOW/BLOWOUT: Human error - swabbing caused kick and resultant blow.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Improving tripping procedures.

HYDROCARBON AND/OR EQUIPMENT LOSS: 250 x 10^3 m^3 sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: POCO ENDIANG 10-5-35-16

LOCATION 100/10-05-035-16W4/0 LICENCE NO.: 0105501

OCCURRENCE

____ BLOW; _X_ BLOWOUT DATE: 13 DECEMBER 1989 DURATION: 20 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; _X_ SERVICING; _____ OTHER

LICENSEE: POCO PETROLEUMS LTD.

CONTRACTOR: CITATION WELL SERVICE RIG #4

FORMATION: VIKING DEPTH: 1070 - 1072 m

FORMATION PRESSURE: 13 800* kPa or DRILLING FLUID DENSITY: ________ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: SHUT-IN GAS WELL

DESCRIPTION OF EVENT: Rigged out snubbing unit. Contractor was preparing to remove BOPs and install the wellhead. While picking up the travelling block, the pick-up sling caught the casing valve and pulled it out of the wellhead.

CONTROL PROCEDURES: Installed lubricator and flow tee on tubing string. Filled tubing with salt water, ran in with perforating gun to 1050 m, perforated tubing and circulated fluid to surface to kill well.

CAUSE OF BLOW/BLOWOUT: Human error.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Contractor will ensure service rig hands hold and guide the pick-up slings until placed where required.

HYDROCARBON AND/OR EQUIPMENT LOSS: $17.6 \times 10^3\ m^3$ of sweet gas.

INJURIES: None.

* Well had just been fractured and stimulated.

BLOW/BLOWOUT SUMMARY

WELL NAME: SHELL NEGUS 3-13-112-24

LOCATION 00/03-13-112-24W5/0 LICENCE NO.: 0138986

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 2 FEBRUARY 1989 DURATION: 2 HOURS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: SHELL CANADA LTD.

CONTRACTOR: HI-TOWER DRILLING #2

FORMATION: UNKNOWN DEPTH: 65 m

FORMATION PRESSURE: UNKNOWN kPa or DRILLING FLUID DENSITY: 1100 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: While reaming boulders and gravel at 53 m the mud volume was getting low. It was decided to pull up to 29 m, above the gravel, to mix mud. After pulling one stand of pipe there was a small gas bubble to surface. The driller opened the blooey line valve and closed the annular preventer. Within seconds there was a steady flow of gas to surface.

CONTROL PROCEDURES: 54 m³ of 1200-kg/m³ mud was pumped and the well was killed.

CAUSE OF BLOW/BLOWOUT: Abnormally pressured zone.

ACTIONS TO PREVENT FUTURE OCCURRENCES: The area will be flagged for potential shallow gas.

HYDROCARBON AND/OR EQUIPMENT LOSS: 500 m³ sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: SIGNALTA CANTERRA PEMBINA 16-12-50-7

LOCATION 102/16-12-050-07W5/0 LICENCE NO.: 0130751

OCCURRENCE

____BLOW; X BLOWOUT DATE: 15 AUGUST 1989 DURATION: 7.5 HOURS

OPERATION AT THE TIME OF OCCURRENCE

_____ DRILLING; X SERVICING; _____ OTHER

LICENSEE: SIGNALTA RESOURCES LIMITED

CONTRACTOR: TRI-ALTA TOOL LTD.

FORMATION: GLAUCONITE DEPTH: 1735.5 - 1740.5 m

FORMATION PRESSURE: 13 400 kPa or DRILLING FLUID DENSITY: __________ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: FLOWING GAS WELL

DESCRIPTION OF EVENT: While rigging out a wireline mast unit, the truck struck the valve on the production casing spool. The valve and nipple came out of the spool, allowing the well to flow.

CONTROL PROCEDURES: A high-pressure pump unit was tied into the tubing and 32 m^3 of fresh water was pumped down the well, stopping the flow. A new production casing spool and valve were installed.

CAUSE OF BLOW/BLOWOUT: Third-party damage.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Contractors must be advised to ensure adequate safety precautions are taken when working close to wellheads.

HYDROCARBON AND/OR EQUIPMENT LOSS: 28 x 10^3 m^3 sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: SIGNALTA ET AL HAIRY HILL 13-8-55-14

LOCATION 100/13-08-055-14W4/0 LICENCE NO.: 0140788

OCCURRENCE

X BLOW; ____ BLOWOUT DATE: 10 SEPTEMBER 1989 DURATION: 2 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; ____ SERVICING; ____ OTHER

LICENSEE: SIGNALTA RESOURCES LTD.

CONTRACTOR:

FORMATION: NISKU DEPTH: 679 m

FORMATION PRESSURE: ____ kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: Lost circulation was anticipated in the Nisku. The mud system was treated with sawdust. The Nisku top was encountered at 660 m. Lost circulation occurred at 679 m.

CONTROL PROCEDURES: Pipe rams were closed and the well flowed through the manifold at about 40 000 m³/d. Four gel sawdust kwik seal pills were pumped with a negative result. A diesel gel plug was placed through the drill pipe, allowing full circulation. The hole was cleaned, logged and cased at 675 m.

CAUSE OF BLOW/BLOWOUT: Human error - incorrect judgement.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Thought should be given to running an intermediate casing string, prior to the Nisku, in this area.

HYDROCARBON AND/OR EQUIPMENT LOSS: 40 000 m³/d sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: SKELLY TRACHSEL JOFFRE 3-19-39-26

LOCATION 100/03-19-039-26W4/0 LICENCE NO.: 0016220

OCCURRENCE

X BLOW; ___ BLOWOUT DATE: 11 AUGUST 1989 DURATION: 0.25 HOUR

OPERATION AT THE TIME OF OCCURRENCE

___ DRILLING; ___ SERVICING; X OTHER

LICENSEE: ESSO RESOURCES CANADA LIMITED

CONTRACTOR: ___

FORMATION: NISKU D-2 DEPTH: 2087.9 - 2095.8 m

FORMATION PRESSURE: ___ kPa or DRILLING FLUID DENSITY: ___ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: Smoke was noted emanating from the packing element. The operator began to back off the stuffing box when the well began to blow.

CONTROL PROCEDURES: The blow was eliminated by closing the radigan blowout preventor.

CAUSE OF BLOW/BLOWOUT: Human error - an excess number of packing elements had been installed in the stuffing box, causing increased wear on the packing element and, as a result, inability to provide adequate seal to hold wellhead pressure.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Operator will ensure the correct number of packer elements are installed in the stuffing box.

HYDROCARBON AND/OR EQUIPMENT LOSS: 0.2 m oil.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: TRIAD REDWATER 2-35-56-21

LOCATION 100/02-35-056-21W4/0 LICENCE NO.: 0001715

OCCURRENCE

X BLOW; ____ BLOWOUT DATE; 19 DECEMBER 1989 DURATION: 6 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; ____ SERVICING; X OTHER

LICENSEE: BP RESOURCES CANADA LIMITED

CONTRACTOR:

FORMATION: LEDUC DEPTH: 925.7 - 962.3 m

FORMATION PRESSURE: 6 400 kPa or DRILLING FLUID DENSITY: ____ kg/m^3

STATUS OF WELL AT TIME OF OCCURRENCE: PUMPING OIL WELL

DESCRIPTION OF EVENT: Flowline problems activated the pressure switch, shutting down the submersible pump. The casing gas pressure built up and began leaking out through the wellhead seals.

CONTROL PROCEDURES: A flare line was tied into the casing side at the wellhead and the gas bleed-off. The wellhead seal assembly was found to be loose and was tightened down.

CAUSE OF BLOW/BLOWOUT: Human error - wellhead seal assembly improperly installed.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Ensure all wellhead seal assemblies are installed and tightened properly.

HYDROCARBON AND/OR EQUIPMENT LOSS: 1.0×10^3 m^3 sour gas (trace of H_2S).

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: UNEX ET AL DRUMHELLER 16-28-28-19

LOCATION 100/16-28-028-19W4/00 LICENCE NO.: 0135699

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 9 AUGUST 1989 DURATION: 24 HOURS

OPERATION AT THE TIME OF OCCURRENCE

____ DRILLING; X SERVICING; ____ OTHER

LICENSEE: UNIVERSAL EXPLORATIONS LTD.

CONTRACTOR: TRIOTECH WIRELINE SERVICES

FORMATION: BANFF DEPTH: 1254.5 - 1271.0 m

FORMATION PRESSURE: 6 500 kPa or DRILLING FLUID DENSITY: ____ kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: FLOWING OIL WELL

DESCRIPTION OF EVENT: 1. Wireline tools became stuck in the hole during dewaxing operations. An attempt was made to flow the well in order to free the tools. The tools released and struck the lubricator which caused the 50.8-mm crossover to fail, allowing the well to flow. 2. It was assumed that the tools had fallen to the bottom of the hole, so the well was placed back on production. The wireline tools came to surface, breaking the flow tee and allowing the well to flow. The tools were lodged in the wellhead, preventing the operator from closing the master valve.

CONTROL PROCEDURES: 1. The lubricator BOPs were closed and a plug pumped into the well. After the plug was frozen the wellhead was repaired. 2. Well control personnel dismantled the top portion of the wellhead and removed the tools. The master valve was then closed.

CAUSE OF BLOW/BLOWOUT: Human error - procedural error.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Increased training and awareness of potential problems while attempting various recovery techniques.

HYDROCARBON AND/OR EQUIPMENT LOSS: 4.0×10^3 m^3 of sweet gas.

INJURIES: None.

BLOW/BLOWOUT SUMMARY

WELL NAME: WELLORE JENNER 5-28-22-9

LOCATION 00/05-28-022-09W4/0 LICENCE NO.: 0139252

OCCURRENCE

____ BLOW; X BLOWOUT DATE: 21 MARCH 1989 DURATION: 6 DAYS

OPERATION AT THE TIME OF OCCURRENCE

X DRILLING; _____ SERVICING; _____ OTHER

LICENSEE: WELLORE ENERGY INC.

CONTRACTOR: ATCOR

FORMATION: GLAUCONITE DEPTH: 974 m

FORMATION PRESSURE: 10 300 kPa or DRILLING FLUID DENSITY: 1140 kg/m³

STATUS OF WELL AT TIME OF OCCURRENCE: DRILLING

DESCRIPTION OF EVENT: A kick was taken and the well shut in. The surface pressure increased rapidly, resulting in the need to divert to the flare pit. Surface equipment washed out within minutes, resulting in a blowout. Control operations continued until 23 March when the rig caught fire. The rig collapsed 35 minutes after catching fire. The well continued to burn until 27 March when the well bridged off.

CONTROL PROCEDURES: On 27 March with the well bridged off, debris was moved out of the way and surface well control equipment was installed. Entry commenced into the wellbore again on 29 March to drill out the bridges to kill the well. Attempts to get to bottom failed. The well was plugged back above the Viking and a relief well was drilled to ensure that the Viking Formation was not overcharged.

CAUSE OF BLOW/BLOWOUT: Human error - swabbing.

ACTIONS TO PREVENT FUTURE OCCURRENCES: Improving tripping procedures. Crews to be trained properly.

HYDROCARBON AND/OR EQUIPMENT LOSS: Oil spray, approximately 1.14×10^6 m³ sweet gas, loss of drilling rig and associated equipment.

INJURIES: None.

APPENDIX - DEFINITIONS

The definitions of terms used in the Drilling Rig Inspections section in this report are:

Active Rig	A rig that drilled at least one well in 1989.
Blow	A flow of fluids (gas, oil, water, mud, etc) to the atmosphere from a well, which can be or is brought under control in a very short time-frame by closing appropriate equipment (control regained almost immediately).
Blowout	A complete loss of control of a flow of fluids from a well. Control can only be regained by the installing of equipment to shut in or kill the well, or by drilling a relief well.
Kick	Any entry of water, gas, oil, or other formation fluid into the wellbore.
Lost Circulation	The loss of drilling fluids from the wellbore into permeable formations penetrated by the well.
Sour Gas	Natural gas, including solution gas containing H_2S.
Sour Well	Any oil or gas well expected to encounter sour gas-bearing formations during drilling or any oil or gas well capable of producing sour gas.
Water Flow	An influx of water into the wellbore from a formation penetrated while drilling that may present problems in maintaining hole integrity.
Operations at time of blow or blowout	
- Drilling	Original operation to drill a well or subsequent deepening of a well.
- Servicing	Servicing operations at a well involving completion, stimulation, special testing, recompletion, or changing downhole equipment (often called workovers).
- Other	Routine production/injection and maintenance operations, third-party damage, suspended, or standing well.